



Overview

Points To Remember About Sports Injuries

- There are two kinds of sports injuries. Acute injuries happen suddenly, such as sprained ankles. Chronic injuries happen after you play a sport or exercise over a long period of time.
- Sports injuries are first treated with R-I-C-E: Rest, Ice, Compression (pressure on the injury), and Elevation (raise the injured area above the heart).
- Doctors will treat more serious injuries with medications, by limiting movement, or by recommending surgery, physical therapy, and rest.
- You can prevent many kinds of sports injuries by following safe exercise habits.

The term “sports injury,” refers to the kinds of injuries that most commonly occur during sports or exercise. Sports injuries can result from:

- Accidents.
- Improper equipment.
- Insufficient warmup and stretching.
- Lack of conditioning.
- Poor training practices.

The most common sports injuries include:

- Muscle sprains and strains.
- Tears of the ligaments that hold joints together.
- Tears of the tendons that support joints and allow them to move.
- Dislocated joints.
- Fractured bones, including vertebrae.

Regardless of the specific structure affected, musculoskeletal sports injuries can generally be classified in one of two ways: acute or chronic.

Acute Injuries

Acute injuries, such as a sprained ankle, strained back, or fractured hand, occur suddenly during activity. Signs of an acute injury include:

- Sudden, severe pain.
- Swelling.
- Inability to place weight on a lower limb.
- Extreme tenderness in an upper limb.
- Inability to move a joint through its full range of motion.
- Extreme limb weakness.
- Visible dislocation or break of a bone.

Chronic Injuries

Chronic injuries usually result from overusing one area of the body while playing a sport or exercising over a long period. The following are signs of a chronic injury:

- Pain when performing an activity.
- A dull ache when at rest.
- Swelling.

Types

Following are some of the most common sports injuries.

Sprains and Strains

A sprain is a stretch or tear of a ligament, the band of connective tissues that joins the end of one bone with another. Sprains are caused by trauma such as a fall or blow to the body that knocks a joint out of position and, in the worst case, ruptures the supporting ligaments. Sprains can range from first degree (minimally stretched ligament) to third degree (a complete tear). Areas of the body most vulnerable to sprains are ankles, knees, and wrists.

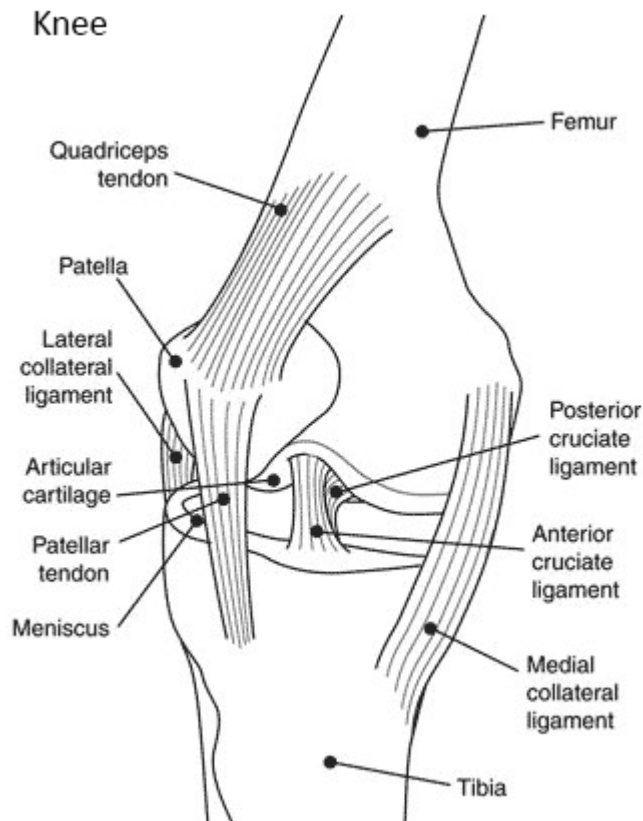
A strain is a twist, pull, or tear of a muscle or tendon, a cord of tissue connecting muscle to bone. It is an acute, noncontact injury that results from overstretching or over-contraction. Although it's hard to tell the difference between mild and moderate strains, severe strains not treated professionally can cause damage and loss of function.

Knee Injuries

The knee is a complex structure and is weight bearing and can be a commonly injured joint.

Knee injuries can range from mild to severe. Some of the less severe injuries to the knee can include:

- Runner's knee, which causes pain or tenderness close to or under the knee cap at the front or side of the knee.
- Iliotibial band syndrome, which causes pain on the outer side of the knee.
- Tendinitis, also called tendinosis, which shows degeneration within a tendon, usually where it joins the bone.



View of the Knee

More severe injuries include bone bruises or damage to the cartilage or ligaments. There are two types of cartilage in the knee. One is the meniscus, a crescent-shaped disc that absorbs shock between the thigh (femur) and lower leg bones (tibia and fibula). The other is a surface-coating (or articular) cartilage. It covers the ends of the bones where they meet, allowing them to glide against one another. The four major ligaments that support the knee are the:

- Anterior cruciate ligament (ACL).
- Posterior cruciate ligament (PCL).
- Medial collateral ligament (MCL).
- Lateral collateral ligament (LCL).

Knee injuries can result from a blow to or twist of the knee; from improper landing after a jump; or from running too hard, too much, or without proper warmup. Read more about [Knee Problems](#)

Compartment Syndrome

In many parts of the body, muscles, along with the nerves and blood vessels that run alongside and through them, are enclosed in a “compartment” formed of a tough membrane called fascia. When muscles become swollen, they can fill the compartment to capacity, causing interference with nerves and blood vessels as well as damage to the muscles themselves. The resulting painful condition is referred to as compartment syndrome.

Compartment syndrome may be caused by:

- A one-time traumatic injury, also known as acute compartment syndrome, such as a fractured bone or a hard blow to the thigh.
- Repeated hard blows or by ongoing overuse, also known as chronic exertional compartment syndrome. For example long-distance running can lead to this syndrome.

Shin Splints

Although the term “shin splints” has been widely used to describe any sort of leg pain associated with exercise, the term actually refers to pain along the tibia or shin bone, the large bone in the front of the lower leg. This pain can occur at the front outside part of the lower leg, including the foot and ankle (anterior shin splints) or at the inner edge of the bone where it meets the calf muscles (medial shin splints).

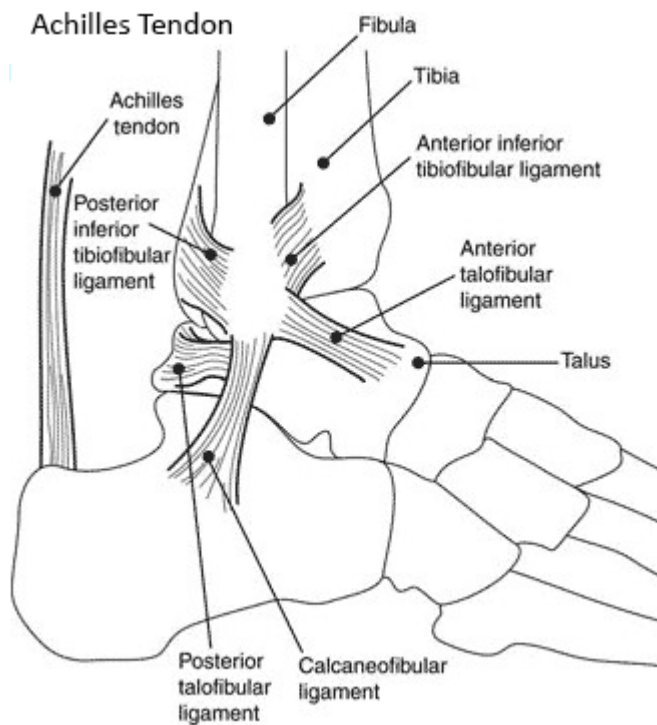
Shin splints are primarily seen in runners, particularly those just starting a running program. Risk factors for shin splints include:

- Overuse or incorrect use of the lower leg.
- Improper stretching, warmup, or exercise technique.
- Overtraining.
- Running or jumping on hard surfaces.
- Running in shoes that don’t have enough support.

These injuries are often associated with flat (overpronated) feet.

Achilles Tendon Injuries

An Achilles tendon injury results from a stretch, tear, or irritation to the tendon connecting the calf muscle to the



Lateral View of the Ankle

back of the heel. These injuries can be so sudden and agonizing that they have been known to bring down charging professional football players in shocking fashion.

The most common cause of Achilles tendon tears is a problem called tendinitis, a degenerative condition caused by aging or overuse. When a tendon is weakened, trauma can cause it to rupture.

Achilles tendon injuries are common in middle-aged “weekend warriors” who may not exercise regularly or take time to stretch properly before an activity. Among professional athletes, most Achilles injuries seem to occur in quick-acceleration, jumping sports like football and basketball, and almost always end the season’s competition for the athlete.

Fractures

A fracture is a break in the bone that can occur from either a quick, one-time injury to the bone, also known as an acute fracture, or from repeated stress to the bone over time, also known as a stress fracture.

Acute fractures can be:

- Simple, usually a clean break with little damage to the surrounding tissue.
- Compound, meaning a break in which the bone pierces the skin with little damage to the surrounding tissue.

Most acute fractures are emergencies. One that breaks the skin is especially dangerous because there is a high risk of infection.

Stress fractures occur largely in the feet and legs and are common in sports that require repetitive impact, primarily running or jumping sports such as gymnastics or track and field. Running creates forces two to three times a person's body weight on the lower limbs.

The most common symptom of a stress fracture is pain at the site that worsens with weight-bearing activity. Tenderness and swelling often accompany the pain.

Dislocations

When the two bones that come together to form a joint become separated, the joint is described as dislocated. Contact sports such as football and basketball, as well as high-impact sports and sports that can result in excessive stretching or falling, cause most dislocations. A dislocated joint is an emergency that requires medical treatment.

The joints most likely to be dislocated are some of the hand joints. Aside from these joints, the joint most frequently dislocated is the shoulder. Dislocations of the knees, hips, and elbows are uncommon.

Symptoms

The symptoms of a sport injury will depend on the type of injury you have.

Symptoms of an acute injury include:

- Sudden, severe pain.
- Swelling.
- Not being able to place weight on a leg, knee, ankle, or foot.
- An arm, elbow, wrist, hand, or finger that is very tender.
- Not being able to move a joint as normal.
- Extreme leg or arm weakness.
- A bone or joint that is visibly out of place.

In addition, signs and symptoms of strains or sprains may also include:

- Varying degrees of tenderness or pain.
- Bruising.
- Inflammation.
- Joint looseness, laxity, or instability.
- Muscle spasm.
- Loss of strength.

Symptoms of a chronic injury include:

- Pain when you play.
- Pain when you exercise.
- A dull ache when you rest.

- Swelling.

Diagnosis

To help diagnose your sports injury, your doctor may:

- Ask about the injury.
- Examine the area of the injury.
- Order an x-ray to make sure you don't have a fracture.

Your doctor may order an MRI to look closely at the area of the injury or pain. An MRI is a noninvasive procedure in which a machine with a strong magnet passes a force through the body to produce a series of cross-sectional images.

Treatment

Whether an injury is acute or chronic, there is never a good reason to try to “work through” the pain of an injury. When you have pain from a particular movement or activity, **stop!** Continuing the activity only causes further harm.

When To Seek Medical Treatment

You should call a health care professional if:

- The injury causes severe pain, swelling, or numbness.
- You can't tolerate any weight on the area.
- The pain or dull ache of an old injury is accompanied by increased swelling or joint abnormality or instability.

When and How To Treat at Home

If you don't have any of the above symptoms, it's probably safe to treat the injury at home—at least at first. If pain or other symptoms worsen, it's best to check with your health care provider. Use the R-I-C-E method to relieve pain and inflammation and speed healing. Follow these four steps immediately after injury and continue for at least 48 hours.

- **Rest.** Reduce regular exercise or activities of daily living as needed. If you cannot put weight on an ankle or knee, crutches may help. If you use a cane or one crutch for an ankle injury, use it on the uninjured side to help you lean away and relieve weight on the injured ankle.
- **Ice.** Apply an ice pack to the injured area for 20 minutes at a time, four to eight times a day. A cold pack, ice bag, or plastic bag filled with crushed ice and wrapped in a towel can be used. To avoid cold injury and frostbite, do not apply the ice for more than 20 minutes. (Note: Do not use heat immediately after an injury. This tends to increase internal bleeding

or swelling. Heat can be used later to relieve muscle tension and promote relaxation.)

- **Compression.** Compression of the injured area may help reduce swelling. Compression can be achieved with elastic wraps, special boots, air casts, and splints. Ask your health care provider for advice on which one to use.
- **Elevation.** If possible, keep the injured ankle, knee, elbow, or wrist elevated on a pillow, above the level of the heart, to help decrease swelling.

Other treatments may include:

- Nonsteroidal anti-inflammatory drugs, also known as NSAIDs. The moment you are injured, chemicals are released from damaged tissue cells. This triggers the first stage of healing: inflammation. Inflammation causes tissues to become swollen, tender, and painful. Although inflammation is needed for healing, it can actually slow the healing process if left unchecked. To reduce inflammation and pain, health care providers often recommend taking an over-the-counter NSAID, such as aspirin, ibuprofen, or naproxen sodium. For more severe pain and inflammation, doctors may prescribe one of several dozen NSAIDs available in prescription strength.
- Immobilization is a common treatment for musculoskeletal sports injuries that may be done immediately by a trainer or paramedic. Immobilization involves reducing movement in the area to prevent further damage. By enabling the blood supply to flow more directly to the injury (or the site of surgery to repair damage from an injury), immobilization reduces pain, swelling, and muscle spasm and helps the healing process begin. Following are some devices used for immobilization:
 - *Slings*, to immobilize the upper body, including the arms and shoulders.
 - *Splints and casts*, to support and protect injured bones and soft tissue. Casts can be made from plaster or fiberglass. Splints can be custom made or ready made. Standard splints come in a variety of shapes and sizes and have Velcro straps that make them easy to put on and take off or adjust. Splints generally offer less support and protection than a cast and therefore may not always be a treatment option.
 - *Leg immobilizers*, to keep the knee from bending after injury or surgery. Made from foam rubber covered with fabric, leg immobilizers enclose the entire leg, fastening with Velcro straps.
- Surgery is needed in some cases to repair torn connective tissues or to realign bones with compound fractures. The vast majority of musculoskeletal sports injuries do not require surgery.

Rehabilitation

A key part of rehabilitation from sports injuries is a graduated exercise program designed to return the injured body part to a normal level of function.

With most injuries, early mobilization—getting the part moving as soon as possible—will speed healing. Generally, early mobilization starts with gentle range-of-motion exercises and then moves on to stretching and strengthening exercises when you can without increasing pain. For example, if you have a sprained ankle, you may be able to work on range of motion for the first day or two after the sprain by gently tracing letters with your big toe. Once your range of motion is fairly good, you can start doing gentle stretching and strengthening exercises. When you are ready, weights may be added to your exercise routine to further strengthen the injured area. The

key is to avoid movement that causes pain.

As damaged tissue heals, scar tissue forms, which shrinks and brings torn or separated tissues back together. As a result, the injury site becomes tight or stiff, and damaged tissues are at risk of re-injury. That's why stretching and strengthening exercises are so important. You should continue to stretch the muscles daily and as the first part of your warmup before exercising.

When planning your rehabilitation program with a health care professional, remember that progression is the key principle. Start with just a few exercises, do them often, and then gradually increase how much you do. A complete rehabilitation program should include exercises for flexibility, endurance, and strength; instruction in balance and proper body mechanics related to the sport; and a planned return to full participation.

Throughout the rehabilitation process, avoid painful activities and concentrate on those exercises that will improve function in the injured part. Don't resume your sport until you are sure you can stretch the injured tissues without any pain, swelling, or restricted movement, and monitor any other symptoms. When you do return to your sport, start slowly and gradually build up to full participation.

Rest

Although it is important to get moving as soon as possible, you must also take time to rest following an injury. All injuries need time to heal; proper rest will help the process. Your health care professional can guide you regarding the proper balance between rest and rehabilitation.

Other Therapies

Other therapies used in rehabilitating sports injuries include:

- *Cold/cryotherapy*: Ice packs reduce inflammation by constricting blood vessels and limiting blood flow to the injured tissues. Cryotherapy eases pain by numbing the injured area. It is generally used for only the first 48 hours after injury.
- *Heat/thermotherapy*: Heat, in the form of hot compresses, heat lamps, or heating pads, causes the blood vessels to dilate and increase blood flow to the injury site. Increased blood flow aids the healing process by removing cell debris from damaged tissues and carrying healing nutrients to the injury site. Heat also helps to reduce pain. It should not be applied within the first 48 hours after an injury.
- *Ultrasound*: High-frequency sound waves produce deep heat that is applied directly to an injured area. Ultrasound stimulates blood flow to promote healing.
- *Massage*: Manual pressing, rubbing, and manipulation soothe tense muscles and increase blood flow to the injury site.

Most of these therapies are administered or supervised by a licensed health care professional.

Who Treats

Although severe injuries will need to be seen immediately in an emergency room, particularly if they occur on the weekend or after office hours, most musculoskeletal sports injuries can be evaluated and, in many cases, treated by your primary health care provider.

Depending on your preference and the severity of your injury or the likelihood that your injury may cause ongoing, long-term problems, you may want to see, or have your primary health care professional refer you to, one of the following.

- An orthopaedic surgeon is a doctor specializing in the diagnosis and treatment of the musculoskeletal system, which includes bones, joints, ligaments, tendons, muscles, and nerves.
- A physical therapist/physiotherapist is a health care professional who can develop a rehabilitation program. Your primary care physician may refer you to a physical therapist after you begin to recover from your injury to help strengthen muscles and joints and prevent further injury.

Prevention

Whether you've never had a sports injury and you're trying to keep it that way or you've had an injury and don't want another, the following tips can help.

- Avoid bending knees past 90 degrees when doing half-knee bends.
- Avoid twisting knees by keeping feet as flat as possible during stretches.
- When jumping, land with your knees bent.
- Do warmup exercises before vigorous activities such as running and also before less vigorous ones such as golf.
- Don't overdo.
- Do warmup stretches before activity. Stretch the Achilles tendon, hamstring, and quadriceps areas and hold the positions. Don't bounce.
- Cool down following vigorous sports. For example, after a race, walk or walk/jog for 5 minutes so your pulse comes down gradually.
- Wear properly fitting shoes that provide shock absorption and stability.
- Use the softest exercise surface available, and avoid running on hard surfaces like asphalt and concrete. Run on flat surfaces. Running uphill may increase the stress on the Achilles tendon and the leg itself.

Prognosis

From the moment a bone breaks or a ligament tears, your body goes to work to repair the damage. Here's what happens at each stage of the healing process:

- ***At the moment of injury:*** Chemicals are released from damaged cells, triggering a process called inflammation. Blood vessels at the injury site become dilated; blood flow

increases to carry nutrients to the site of tissue damage.

- ***Within hours of injury:*** White blood cells (leukocytes) travel down the bloodstream to the injury site where they begin to tear down and remove damaged tissue, allowing other specialized cells to start developing scar tissue.
- ***Within days of injury:*** Scar tissue is formed on the skin or inside the body. The amount of scarring may be proportional to the amount of swelling, inflammation, or bleeding within. In the next few weeks, the damaged area will regain a great deal of strength as scar tissue continues to form.
- ***Within a month of injury:*** Scar tissue may start to shrink, bringing damaged, torn, or separated tissues back together. However, it may be several months or more before the injury is completely healed.

Research Resources

Numerous studies are supported by the National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS) and other institutes of the U.S. Department of Health and Human Services' National Institutes of Health (NIH).

More information on research is available from the following websites:

- [NIH Clinical Research Trials and You](#) was designed to help people learn more about clinical trials, why they matter, and how to participate. Visitors to the website will find information about the basics of participating in a clinical trial, first-hand stories from clinical trial volunteers, explanations from researchers, and links on how to search for a trial or enroll in a research-matching program.
- [ClinicalTrials.gov](#) offers up-to-date information for locating federally and privately supported clinical trials for a wide range of diseases and conditions.
- [NIH RePORTER](#) is an electronic tool that allows users to search a repository of both intramural and extramural NIH-funded research projects from the past 25 years and access publications (since 1985) and patents resulting from NIH funding.
- [PubMed](#) is a free service of the U.S. National Library of Medicine that lets you search millions of journal citations and abstracts in the fields of medicine, nursing, dentistry, veterinary medicine, the health care system, and preclinical sciences.

Related Resources

U.S. Food and Drug Administration

Toll free: 888-INFO-FDA (888-463-6332)

Website: <https://www.fda.gov>

[Drugs@FDA](#) at <https://www.accessdata.fda.gov/scripts/cder/daf>. [Drugs@FDA](#) is a searchable catalog of FDA-approved drug products.

Centers for Disease Control and Prevention, National Center for Health Statistics

Website: <https://www.cdc.gov/nchs>

American Academy of Orthopaedic Surgeons

Website: <http://www.aaos.org>

American Academy of Pediatrics

Website: <http://www.aap.org>

American College of Sports Medicine

Website: <http://www.acsm.org>

American Medical Society for Sports Medicine

Website: <http://www.amssm.org>

American Orthopaedic Society for Sports Medicine

Website: <http://www.sportsmed.org>

American Physical Therapy Association

Website: <http://www.apta.org>

National Athletic Trainers Association

Website: <http://www.nata.org>

If you need more information about available resources in your language or other languages, please visit our webpages below or contact the NIAMS Information Clearinghouse at NIAMSInfo@mail.nih.gov.

- [Asian Language Health Information](#)
- [Spanish Language Health Information](#)

Related Information

[La historia de Ana: Cómo ella y su familia aprendieron sobre las lesiones depor...](#)

[Ana's Story](#)

[Lesiones deportivas: Esenciales: hojas informativas de fácil lectura](#)

View/Download/Order Publications

[Sports Injuries, Easy-to-Read Fast Facts](#)

[Preventing Musculoskeletal Sports Injuries in Youth: A Guide for Parents](#)

[Sports Injuries, Handout on Health](#)

[Sprains and Strains, Questions and Answers about](#)

[Bursitis and Tendinitis, Questions and Answers about](#)